

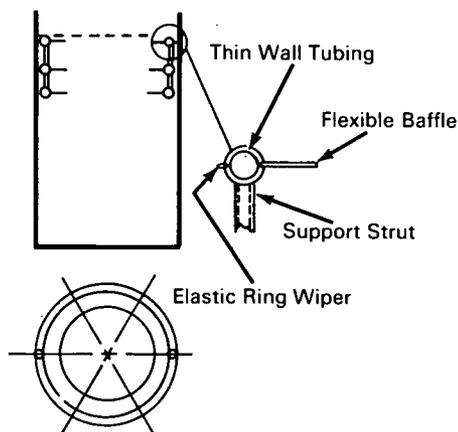
NASA TECH BRIEF



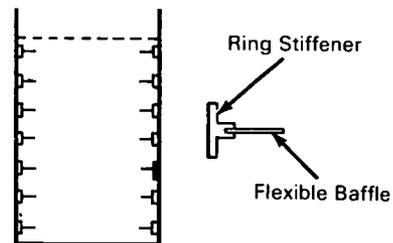
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Flexible Ring Baffles for Damping Liquid Slosh

(a) Self Positioning Flexible Baffle Configuration



(b) Flexible Baffle and Structural Stiffener Configuration



The problem:

To provide a relatively lightweight system for damping the motions of liquid propellants in launch vehicles, missiles, and other tankage systems.

The solution:

Slosh damping, comparable to that provided by rigid baffles is obtained through the use of smaller, less massive, flexible baffles.

How it's done:

The propellant tank is fitted with a series of baffles which are capable of moving, deforming, and/or deflecting with respect to the tank wall. The flexible baffles are positioned within the tank by means of a support-guide system as shown in the sketch. Sketch (a) illustrates a guided, self-positioning flexible baffle configuration. Several flexible rings are supported by buoyant tubes fitted around the tank periphery which position the baffles slightly below the liquid surface. As the propellant is consumed, the baffles follow the mean level of the propellant due to the buoyant action

of the liquid while the tank walls provide constraint for any lateral or pitching oscillations. If stiffeners are required in the tank, the flexible baffles and support rings shown in sketch (b) may serve the dual purpose of slosh damper and stiffener.

Note:

Further information concerning this invention is presented in NASA TN D-3878, "Effectiveness of Flexible and Rigid Ring Baffles for Damping Liquid Oscillations in Large-Scale Cylindrical Tanks" by David G. Stephens and Harland F. Scholl, March 1967, available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151; price \$3.00. Inquiries may also be directed to:

Technology Utilization Officer
Langley Research Center
Langley Station
Hampton, Virginia 23365
Reference: B68-10064

(continued overleaf)

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: David G. Stephens and
George W. Brooks
(LAR-90194)